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| 09/433,204      | 11/04/1999  | ROBERT ALAN HAMM     | 12-14-9-7-5         | 2245             |

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EXAMINER

DANG, TRUNG Q

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 04/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/433,204

Applicant(s)

HAMM ET AL.

Examiner

Trung Q. Dang

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

Art Unit: 2823

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The rejection is maintained as of record and is repeated herein.

Claims 16, 17, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamahata (JP 08-203435 with English translation provided).

The reference teaches every positive step of the claimed invention in that it discloses a method of fabricating a semiconductor device comprising the steps of: forming at least one conductive post 8' overlying the semiconductor region, said conductive post is formed by a lift-off method and comprises at least one of Pt, Au, and Ti (Fig. 5 and paragraph [0030]); encapsulating said conductive post by spin coating benzocyclobutene (BCB) and thereafter curing said BCB at 250 °C to form a planarized cured passivation layer 10 (fig. 6 and paragraph [0033]); and etching the BCB layer 10 to expose conductive post 8' (fig. 10).

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

Art Unit: 2823

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamahata as above and further in view of Costas et al. (U.S. Pat. No. 6,137,125).

The rejection is maintained as of record and is repeated herein.

Yamahata teaches the claimed invention as noted above except for the claimed limitations concerning curing the BCB layer in nitrogen atmosphere in 1-30 minutes. Costas teaches that curing BCB in a nitrogen atmosphere is commonly known in the art (col. 4, line 47). Thus, it would have been obvious to one of ordinary skill in the art to cure the BCB layer 10 in Yamahata in nitrogen atmosphere as suggested by Costas because such process is well known in the art, and the application of an old process to make the same would have been within the level of an artisan, absent any showing of criticality by applicant. As for the duration of which the BCB is cured, it is well settled that, absent a showing of criticality by applicant, the determination of the claimed curing duration would have been obvious to one of ordinary skill in the art since it has been held that, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); In re Sola 25 USPQ 433 (CCPA); In re Waite 77 USPQ 586 (CCPA).

Art Unit: 2823

3. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamahata as above and further in view of Kasuya (JP 08-017798 with English translation provided).

The rejection is maintained as of record and is repeated herein.

Yamahata teaches the claimed invention as noted above, differs from the claimed in not disclosing the chemistry of which the BCB layer 10 is etched as recited in the claim. However, Kasuya teaches reactive ion etching (RIE) of BCB using either CF<sub>4</sub>/O<sub>2</sub> mixture (CF<sub>4</sub>:O<sub>2</sub> ratio is 2:3) or SF<sub>6</sub>/O<sub>2</sub> mixture (SF<sub>6</sub>:O<sub>2</sub> ratio is 2:3). See Fig. 10, paragraph [0014], and abstract.

It would have been obvious to one of ordinary skill in the art to etch the BCB layer 10 in Yamahata by RIE using CF<sub>4</sub>/O<sub>2</sub> mixture or SF<sub>6</sub>/O<sub>2</sub> mixture with the aforementioned gas ratio as suggested by Costas because such process is well known in the art, and the application of an old process to make the same would have been within the level of an artisan, absent any showing of criticality by applicant.

4. Applicant's arguments filed 1-27-2003 have been fully considered but they are not persuasive.

With respect to all rejected claims, applicants primarily argue that the primary reference to Yamahata neither teaches nor discloses the limitation "forming a conductive post" as recited in independent claim 16.

Art Unit: 2823

The Examiner respectfully disagrees. As pointed out in the rejection, conductive layer 8' of the reference is considered as the claimed conductive post. The limitation "conductive post" is interpreted as a piece of metal set upright. The conductive layer 8' meets that standard, hence reads on the claimed limitation "conductive post".

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

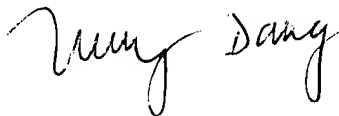
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Art Unit: 2823

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trung Dang whose telephone number is (703) 308-2548. The examiner can normally be reached on weekdays from 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (703) 306-2794. The fax phone number for this Group is (703) 305-3432 or (703) 308-7725.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'Trung Dang', with a stylized, cursive script.

Trung Dang

Primary Examiner, Group 2800